Claims:

1. Eukaryotic histone H1 protein for the inhibition of growth and/or the induction of death of a microorganism.

2. An antimicrobial composition comprising a substantially purified eukaryotic histone H1 protein, according to claim 1.

3. An antimicrobial composition according to claim 2, wherein said eukaryotic histone H1 protein is chemically modified.

4. An antimicrobial composition according to claim 3, wherein said chemically modified eukaryotic histone H1 protein is a polyethylene glycol-derivated eukaryotic histone H1 protein.

5. An antimicrobial composition according to any of claims 2 to 4, comprising a further supplemental antibiotic, selected from the group comprising histones H2A, H2B, H3, H4, and H5, penicillin, streptomycin, vancomycin, bacitracin, polymyxin, neomycin, chloramphenicol, chlortetracycline, ciprofloxacin, tobramycin, erythromycin, gentamicin, gramicidin, oxytetracycline, norfloxacin, a salt of an antibiotic, and an ester of an antibiotic.

6. An antimicrobial composition according to any of claims 2 to 5, comprising lysozyme.

7. A pharmaceutical composition comprising an antimicrobial composition according to any of claims 2 to 6, and a pharmaceutically acceptable carrier.

8. Use of a composition according to any of claims 2 to 7 for the inhibition of growth and/or the induction of death of a microorganism, wherein said microorganism is brought into contact with eukaryotic histone H1.

9. Use of a composition according to any of claims 2 to 8, for the inhibition of growth and/or the induction of death of a microorganism, which is resistant against at least one antibiotic.

10. Use of a composition according to claim 8 or 9, wherein said microorganism is a human or animal pathogen.

11. Use of a composition according to claim 10, wherein said pathogen is a bacterium.

12. Use of a composition according to claim 11, wherein said bacterium is selected from the group comprising *Escherichia coli*, *Klebsiella pneumoniae*, a *Shigella* species, *Serratia marcescens*, *Bacillus cereus*, *Bacillus subtilis*, *Pseudomonas aeruginosa*, *Proteus morgani*, *Staphylococcus albus*, *Salmonella typhimurium*, *Salmonella enteritidis*, and *Bacillus megaterium*.

13. Use of a pharmaceutical composition according to any of claims 7 to 12 for the treatment of a microbial infection in a human or an animal or a plant, wherein said pharmaceutical composition is administered to said human or animal or plant.

14. Use of a pharmaceutical composition according to any of claims 7 to 13, wherein said pharmaceutical composition is in the form of a suspension suitable for injection or infusion into a human or animal tissue.

15. Use of a pharmaceutical composition according to claim 14, wherein said tissue is blood.

16. Use of a pharmaceutical composition according to any of claims 7 to 13, wherein said pharmaceutical composition is in the form of a wound dressing.

17. A wound dressing according to claim 16, wherein said wound dressing is selected from the group comprising a creme, a gel, an absorbent material, and a physiologically degradable material.

18. A kit comprising a pharmaceutical composition according to any of claims 7 to 15 and/or a wound dressing according to claim 16 or 17 and an instructional material selected from the group comprising an instructional material which describes use of said pharmaceutical composition and/or wound dressing to kill a microorganism and an instruction material which describes use of said antimicrobial composition and/or wound dressing to arrest growth of a microorganism.

19. Use of eukaryotic histone H1 protein according to claim 1 for the preparation of a vaccine against a microorganism, wherein eukaryotic histone H1 protein is added to a preparation of microorganisms comprising microorganisms from at least one microorganism strain, whereby said microorganisms are attenuated or killed, said vaccine comprising said eukaryotic histone H1 protein and said attenuated or killed microorganisms.

20. Use of a vaccine for vaccinating a human or an animal, comprising administering to said human or animal a vaccine according to claim 19.

21. An antidote composition against eukaryotic histone H1 protein comprising heparin.

22. Use of an antidote composition according to claim 21 for the partial or total inactivation of eukaryotic histone H1 protein, that has been administered to a human or an animal, e.g. in a use of a pharmaceutical composition comprising eukaryotic histone H1 protein, wherein a predetermined amount of heparin for the partial or total inactivation of histone H1 is administered to said human or animal.

23. Use of eukaryotic histone H1, H2A, H2B, H2A:H2B dimer, H3 and/or H4 for the partial or total inactivation of heparin in the body of a human or an animal, wherein a predetermined amount of said histone H1, H2A, H2B, H2A:H2B dimer, H3 and/or H4, and preferably of eucaryotic histone H1, for the partial or total inactivation of heparin is administered to said human or animal.

24. Use of an antimicrobial composition according to any of claims 2 to 20, for preventing or treating microbial infections in the breeding of animals, comprising but not limited to cattle, swine, poultry, fish, and domestic animals.

25. Use of an antimicrobial and/or pharmaceutical composition according to any of claims 2 to 13 in a supplemented animal feed, comprising an animal feed supplemented with said composition.

26. Use of a supplemented animal feed according to claim 25, for improving the growth of a non-human animal, comprising feeding said animal said supplemented animal feed.

27. Use of an antimicrobial composition according to any of claims 2 to 6 for the inhibition of bacterial growth in the production of food stuff, comprising solid food and/or beverages, including but not limited to meat, fish, milk, cheese, bread, crops, beer, wine and any products made thereof, wherein said antimicrobial composition is added to said food stuff.

28. Use of an antimicrobial composition according to any of claims 2 to 6 and/or 27 for the conservation of food stuff, comprising solid food and/or beverages, meat, fish, milk, cheese, bread, crops, beer, wine and any products made thereof, wherein said antimicrobial composition is added to said food stuff.

29. Use of an antimicrobial and/or pharmaceutical composition according to any of claims 2 to 18 in personal care products, comprising any type of cosmetics, e.g. creams, lotions, deodorants, lipsticks, tooth pastes, tooth powders, dental flosses, mouthwashes, sanitary napkins or vaginal tampons, and insoles,

wherein said antimicrobial composition is added to said personal care products.

30. Use of eucaryotic histone H1 protein according to any of claims 1 to 13, wherein eukaryotic histone H1 protein is incorporated into and/or used for the coating of

surgical implants; catheters selected from the group including but not limited to intravenous lines, intravenous pumps and urinary catheters; band aids, wound dressings, plasters, sanitary napkins or vaginal tampons for the treatment of infections with unwanted bacteria.

31. A method according to claim 30 for the incorporation into and/or for the coating of atitanium implant with eukaryotic histone H1 protein, comprising a first step, wherein at least one predetermined part of a surface of said titanium implant is chemically modified in order to contain negatively charged groups, and a second step, wherein the implant is brought into contact with eukaryotic histone H1.

32. A method according to claims 30 or 31, comprising a first step, wherein coupling groups are covalently linked to at least one predetermined part of a surface of a

surgical implant; catheter selected from the group including but not limited to intravenous lines, intravenous pumps and urinary catheters; band aid, wound dressing, plaster, sanitary napkin or vaginal tampon for the treatment of infections with unwanted bacteria,

said coupling groups covalently or by electrostatic interaction binding histone H1, and a second step, wherein said

surgical implant; catheter selected from the group including but not limited to intravenous lines, intravenous pumps and urinary catheters band aid, wound

dressing, plaster, sanitary napkin or vaginal tampon for the treatment of infections with unwanted bacteria,

is brought into contact with histone H1.

33. Use of eukaryotic histone H1 protein according to any of claims 30 to 32, wherein at least one predetermined part of a surface of a

surgical implant; catheter selected from the group including but not limited to intravenous lines, intravenous pumps and urinary catheters; band aid, wound dressing, plaster, sanitary napkin or vaginal tampon for the treatment of infections with unwanted bacteria,

is coated with a surface layer, comprising of histone H1 and at least one synthetic polymer and/or at least one polymer containing biological macromolecules.

34. Use of eucaryotic histone H1 protein according to any of claim 1 to 13, wherein eukaryotic histone H1 protein is incorporated into and/or used for the coating of

wraps for the covering and conservation of perishable food, comprising of at least one synthetic polymer and/or at least one polymer comprising biological macromolecules,

35. A method according to claim 34, comprising a first step, wherein coupling groups are covalently linked to at least one predetermined part of at least one surface of

a wrap for the covering and conservation of perishable food, comprising at least one synthetic polymer and/or at least one polymer comprising biological macromolecules,

said coupling groups covalently or by electrostatic interaction binding histone H1, and a second step, wherein said

wrap is brought into contact with histone H1.

36. A method according to claim 34 or 35, wherein at least one predetermined part of at least one surface of said wrap is coated with a surface layer comprising histone H1 and at least one synthetic polymer and/or at least one polymer containing biological macromolecules.

37. A method according to claim 33 or 36, wherein the surface layer continuously releases histone H1 by diffusion and/or by biodegradation of said surface layer.

add 7
A1